

## 2019 Commercial Passenger Vessels Discharge Status and Wastewater Treatment

Vessel Operator	Vessel Name	Total Persons on Board <sup>1</sup>	Number of Port Calls <sup>2</sup>	Blackwater (BW) Treatment System Manufacturer	Approved for Discharge in Washing <sup>3</sup> on <sup>3</sup>		Approved for Discharge in Washing <sup>3</sup> on <sup>3</sup>		Type of Treatment System <sup>4</sup>
					BW	GW	BW	GW	
<b>CLIA - North West &amp; Canada Cruise Association Vessels</b>									
Carnival Cruise Lines	<i>CARNIVAL LEGEND</i>	3084	19	Triton-Format	NO	NO	NO	NO	Traditional MSD - Triton-Format - aeration, settling, chlorination
Celebrity Cruises	<i>CELEBRITY ECLIPSE</i>	3891	1	Kruger/Wabaag	NO	NO	NO	NO	AWTS: Kruger/Wabag is a biological reactor and ultrafiltration system
Celebrity Cruises	<i>CELEBRITY SOLSTICE</i>	3891	17	Kruger/Wabaag	NO	NO	NO	NO	AWTS: Kruger/Wabag is a biological reactor and ultrafiltration system
Holland America	<i>AMSTERDAM</i>	2160	10	Hamworthy Type II MSD	NO	NO	NO	NO	Traditional MSD - aeration, settling, chlorination
Holland America	<i>EURODAM</i>	3039	22	Hamworthy Bioreactor	NO	NO	NO	NO	AWTS: Hamworthy is a biological reactor and ultrafiltration system
Holland America	<i>MAASDAM</i>	1977	1	Zenon AWWTS	NO	NO	NO	NO	AWTS: Zenon is a biological reactor and ultrafiltration system.
Holland America	<i>OOSTERDAM</i>	2628	22	Rochem AWWTS	NO	NO	NO	NO	AWTS: Rochem is a reverse osmosis or ultrafiltration system.
Norwegian Cruise Lines	<i>NORWEGIAN BLISS</i>	5319	23	Scanship	NO	NO	NO	NO	AWTS: Scanship is a biological reactor flocculation/fotation & UV disinfection system
Norwegian Cruise Lines	<i>NORWEGIAN JOY</i>	5344	26	Scanship	NO	NO	NO	NO	AWTS: Scanship is a biological reactor flocculation/fotation & UV disinfection system
Oceania	<i>REGATTA</i>	1275	9	Triton AWP	NO	NO	NO	NO	AWTS: Triton Water MBR is a biological reactor and ultrafiltration system
Princess Cruise Line	<i>GRAND PRINCESS</i>	3551	2	Hamworthy Bioreactor	NO	NO	NO	NO	AWTS: Hamworthy is a biological reactor and ultrafiltration system
Princess Cruise Line	<i>ROYAL PRINCESS</i>	4683	1	Hamworthy Bioreactor	NO	NO	NO	NO	AWTS: Hamworthy is a biological reactor and ultrafiltration system
Princess Cruise Line	<i>RUBY PRINCESS</i>	4031	19	Hamworthy Bioreactor	NO	NO	NO	NO	AWTS: Hamworthy is a biological reactor and ultrafiltration system
Princess Cruise Line	<i>STAR PRINCESS</i>	3550	21	Hamworthy Bioreactor	NO	NO	NO	NO	AWTS: Hamworthy is a biological reactor and ultrafiltration system
Royal Caribbean	<i>OVATION OF THE SEAS</i>	5220	18	Scanship	NO	NO	NO	NO	AWTS: Scanship is a biological reactor flocculation/fotation & UV disinfection system
Seabourn Cruise Line	<i>SEABOURN SOJOURN</i>	788	1	Hamworthy Bioreactor	NO	NO	NO	NO	AWTS: Hamworthy is a biological reactor and ultrafiltration system
Windstar	<i>STAR LEGEND</i>	367	1	Rochem UF AWWTS	NO	NO	NO	NO	AWTS: Rochem UF is a biological reactor and ultrafiltration system.
<b>NON CLIA - North West &amp; Canada Cruise Association Vessels<sup>5</sup></b>									
Azamara Club Cruises	<i>QUEST</i>	1288	2	Unknown	NO	NO	NO	NO	Unknown

Total Calls: 215

<sup>1</sup>Numbers come from the Port of Seattle, Alaska Discharge Status Report and information gathered from the cruise industry and research. Most values include both passengers and crew. Actual number of passenger aboard varies dependent upon sales.

<sup>2</sup>Number of Port calls comes for Port of Seattle Cruise Schedule for 2019

<sup>3</sup>Washington waters refers to the "waters subject to this Memorandum of Understanding (MOU)" as defined in the MOU

<sup>4</sup>Information on the types of treatment systems comes from inspections, the Alaska Discharge Status Report and information from the cruise industry updated to the best of our knowledge.

<sup>5</sup>Non Cruise Lines International Association North West & Canada vessels are not party to the MOU and the requirements of the MOU.

<sup>6</sup>Unknown refers to the fact that the type of treatment system has not been confirmed during an inspection or verified.